Only the german version of the module description as part of the study regulations is legally binding.

Module name	**Algorithmic game theory**
Module number	INF-25-Ma-FTK-GaT
Responsible lecturer	Dr. habil. Hannes Straß hannes.strass@tu-dresden.de
Qualification objectives	Students have in-depth knowledge of mathematical and algorithmic game theory. They know the central concepts, relationships and algorithms for non-cooperative normal-form and extensive-form games as well as cooperative games, can reproduce core statements mathematically correctly, formally substantiate and apply them and have the ability to independently derive and prove statements based on them on the mathematical or algorithmic foundations of the field.
contents	Contents of the module are normal form games, solution concepts for these as well as the calculation of such solution concepts, game trees with complete information with their solution concepts and search algorithms, extensive form games and solution concepts as well as search algorithms for these, the connection of extensive form and normal form games, cooperative games as well as their solution concepts and possible calculation methods of the solution concepts.
Forms of teaching and learning	The module includes lectures in the scope of 2 SWS and exercises in the scope of 2 SWS as well as self-study. The teaching language of the lectures and the exercises can be German or English and will be specified by the lecturer at the beginning of each semester and announced in the usual way.
Requirements for participation	In the Computer Science degree program, the competencies to be acquired in the modules INF-25-Ba-AuD Algorithms and Data Structures, INF-25-Ba-AuB Automata and Predictability Theory, INF-25-Ba-LuK Logic and Complexity, INF-25-Ba-Ma1 Linear Algebra and Analysis, INF-25-Ba-Ma2 Discrete Structures, INF-25-Ba-Ma3 Algebra, INF-25-Ba-Ma4 Probability Theory and Statistics, and INF-25-Ba-AI Artificial Intelligence are required. The Master's programme in Computer Science requires knowledge of the basics of algorithm design, formal languages, theoretical computer science and the logic of statements and predicates, as well as knowledge of mathematics at the bachelor's level.

usability	The module is a compulsory elective module in the field of Theoretical Computer Science and Symbolic Artificial Intelligence in the master's degree programme Computer Science, which must be chosen in accordance with Annex 2 to the Examination Regulations. The module in the Master's programme Computer Science is a compulsory elective module in the Open Track in the subject area Theoretical Computer Science and Symbolic Artificial Intelligence as well as the supplement, which is to be selected in accordance with Annex 2 to the examination regulations. The module can only be selected once in the Master's programme Computer Science. The module cannot be selected in the Master's program Computer Science if this or a substantially identical module from a degree program with which the admission requirements according to §3 of the study regulations have been met has already been completed. The module creates the prerequisites for the modules, which it names under prerequisites for participation.
Conditions for awarding credits	The credit points are earned when the module examination has been passed. The module examination consists of a non-public oral examination performance as an individual examination of 20 minutes duration. The language of the examination can be German or English and will be specified by the lecturer at the beginning of each semester and announced in the usual manner.
Credits and grades	6 credit points can be earned through the module. The module grade corresponds to the grade of the examination performance.
Frequency of the module	The module is offered every summer semester.
workload	The total workload is 180 hours.
Duration of the module	The module consists of 1 semester.